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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/580,203

05/23/2006

Marc Chenu-Tournier

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EXAMINER

TRAN, KHANH C

ART UNIT

PAPER NUMBER

2611

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/580,203	Applicant(s) CHENU-TOURNIER, MARC	
	Examiner KHANH C. TRAN	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The Amendment filed on 7/2/2009 has been entered. Claims 1-6 are still pending in this Office action.

Response to Arguments

2. Applicant's arguments, see Applicant's Remarks, filed on 7/2/2009, with respect to ***claims 1-6 rejection under 35 U.S.C 101 and claims 4-6 rejection under 35 U.S.C 112*** have been fully considered and are persuasive. The rejection of ***claims 1-6 under 35 U.S.C 101 and claims 4-6 under 35 U.S.C 112*** has been withdrawn.

3. Applicant's arguments filed on 7/2/2009, regarding claims 1-6 rejection under U.S.C 103(a), have been fully considered but they are not persuasive.

Applicant's arguments on pages 5 of the Remarks:

Applicant respectfully submits that Mills, at column 9, lines 12-19, appears to relate only to CDMA system or similar system, and therefore requires an ordering of user indices.

The method of claim 1 is distinguished from Mills in that Applicant's method does not use ordering means. It considers all the users as a whole.

For example, Mills, at column 7, lines 21-25, states that "the invention is devised in the light of the problems of the prior art described herein," and in columns 1-4, mentions the CDMA system. Furthermore, column 7 lines 31-40, specifically states that ordering the user indices is necessary. This is further stated in at least claim 1 of Mills, all other independent claims, 10 and 17, and column 9, lines 45-50.

The Examiner's position is that Mills et al. teaches multi-user detection (MUD) element 80 in FIG. 1, as a whole, for processing the digital data and extracting the user signals. Mills et al. FIG. 3 is a detailed embodiment of MUD element 80 in which detailed processing is performed.

Regarding the claimed step of determining qualitative information on the symbols estimated for each of the NT users. In column 15 lines 15-30, Mills et al. discloses determining reliability measures or soft estimates of the symbols done for each user and all symbol intervals and providing K streams of reliability measures or soft estimates of the symbols, one stream of soft symbol decisions for each user is passed in time-ordered form to a bank of single-user decoders 340. The reliability measure corresponds to the qualitative information claimed. Mills et al. teachings performing iteratively and the step of ordering user indices in FIG. 3 illustrate the signal processing in MUD scheme taught by Mills et al.. Nevertheless, Mills et al. teachings still render the claimed step of determining qualitative information on the symbols estimated for each of the NT users because the claimed step is a method step. For that reasons, claim rejection under 35 U.S.C 103(a) still maintains in this Office action.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mills et al. U.S. Patent 6,704,376 B2 (previously cited).

Regarding claim 1, in column 11 lines 30-36, Mills et al. teaches in FIG. 1, a number of users (1-K) generate signals that are sent by transmitters 10 into free space. The various signals are received at antennas (1-p) 20, wherein there is one signal for each polarization feed. The signals represent directly received signals 30, as well as multi-path signals 40 from the same user, and interfering signals 50 from other users.

In column 11 lines 4-10, Mills et al. FIG. 3 embodiment illustrates a MUD system.

Mills et al. does not expressly disclose qualitative information as claimed in the application claim.

However, as further disclosed in column 15 lines 15-30, Mills et al. discloses determining reliability measures or soft estimates of the symbols done for each user and all symbol intervals and providing K streams of reliability measures or soft estimates of the symbols, one stream of soft symbol decisions for each user is passed in time-ordered form to a bank of single-user decoders 340. Because the reliability measures are measured for each user as recited above, in view of that, one of ordinary skill in the art at the time the invention was made would have recognized that the reliability measures measured for each user correspond to the quality information claimed.

As recited above, in column 15 lines 15-30, Mills et al. teachings disclose that the process is done for each user and all symbol intervals and provides K streams of reliability measures or soft estimates of the symbols, one stream of soft symbol decisions for each user is passed in time-ordered form to a bank of single-user

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decoders 340 that correspond to the processing block claimed. Single user decoders 340 use the information as a priori information that corresponds to a priori information claimed and output conditional probabilities that are then fed back to the ordering unit 310. In view of that, the conditional probabilities correspond to the quality information claimed.

The output of the multi-user detector is a series of best guesses, which corresponds to the qualitative information on the encoded bits and on the useful bits claimed, as to what the particular decoded bit should be. These guesses are the result of the application of various assumptions in the multi-user detection algorithm based upon prior expected knowledge of the signals; see column 15 lines 35-45.

Referring back to FIG. 3, output of ordering unit 320 is inputted to MUD 320, and output of voting 330 is inputted to bank of SISO single-user decoders 340. In view of that, the foregoing teachings correspond to the step of transmitting the quality information to a decoding step claimed.

Regarding claim 2, in column 15 lines 25-30, the MUD as taught by Mills et al. is a MAP (maximum a Posteriori) MUD.

Regarding claim 3, Mill et al. does not disclose the quality information is fairly constant.

As recited in claim 1 rejection, Mills et al. further discloses that process is done for each user and all symbol intervals and provides K streams of reliability measures or

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soft estimates of the symbols, one stream of soft symbol decisions for each user is passed in time-ordered form to a bank of single-user decoders 340. Single user decoders 42 use the information as a priori information and output conditional probabilities that are then fed back to the ordering unit 310.

The output of the multi-user detector is a series of best guesses as to what the particular decoded bit should be. Because Mills et al. teachings are iterative and the output conditional probabilities are then fed back to the ordering unit 310, one of ordinary skill in the art would have recognized that the soft estimates of the symbols and the series of best guesses (both corresponds to the qualitative information) are fairly constant after several iterations.

Regarding claims 4-6, in column 2 lines 45-50, Mills et al. discusses in operation, a plurality of spread information signals, such as binary phase shift keying (BPSK) or quadrature phase shift keying (QPSK) modulation are employed.

Conclusion

5. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KHANH C. TRAN whose telephone number is (571)272-3007. The examiner can normally be reached on Monday - Friday from 08:00 AM - 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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***/KHANH C. TRAN/
Primary Examiner, Art Unit 2611***